Practical Application of Python in GIS

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Abstract

Python scripts were developed within a Geographic Information System (GIS) to automate procedures to assist a membership-based organization in conducting grass roots lobbying. Data was compiled from several sources in order to provide the necessary input files. Member addresses were geocoded, a process that converts a postal address into coordinates (lat./long.). Python scripting was utilized to select either a specific legislative district, committee, or committee leader and subsequently generate an output file containing contact information. The results are a streamlined procedure to identify specific members to mobilize for grassroots lobbying efforts.

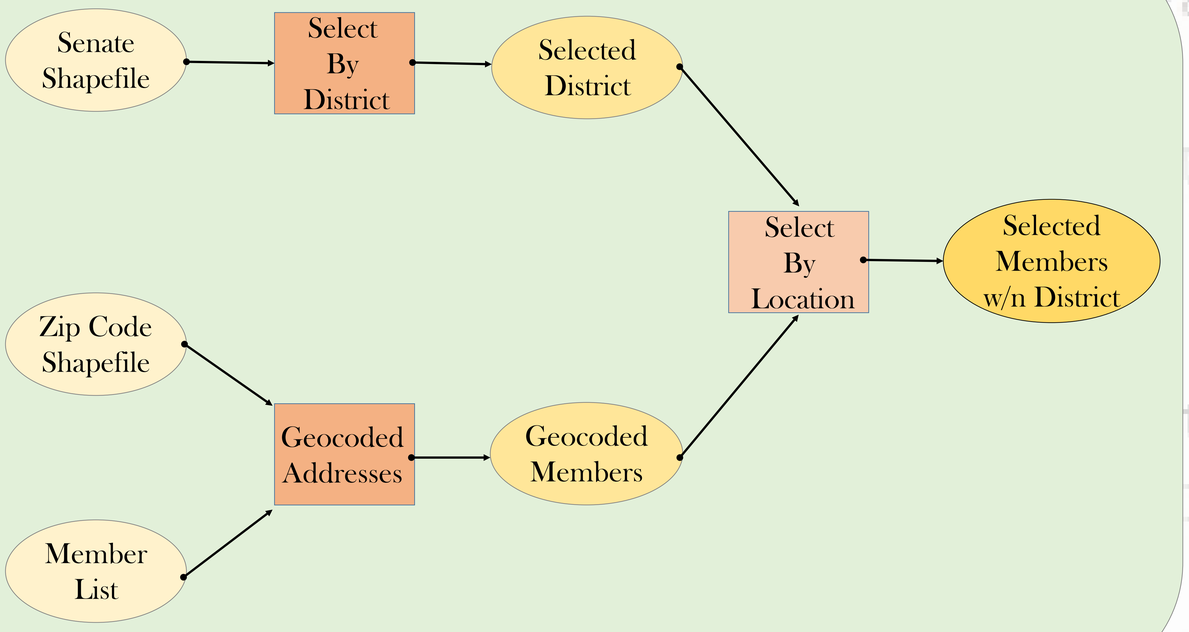
Python

- Simple and easy to learn object-oriented programming language
- Free and open source
- Works on multiple platforms (Windows, Mac, Linux)
- Interpreted language = no compilation to binary

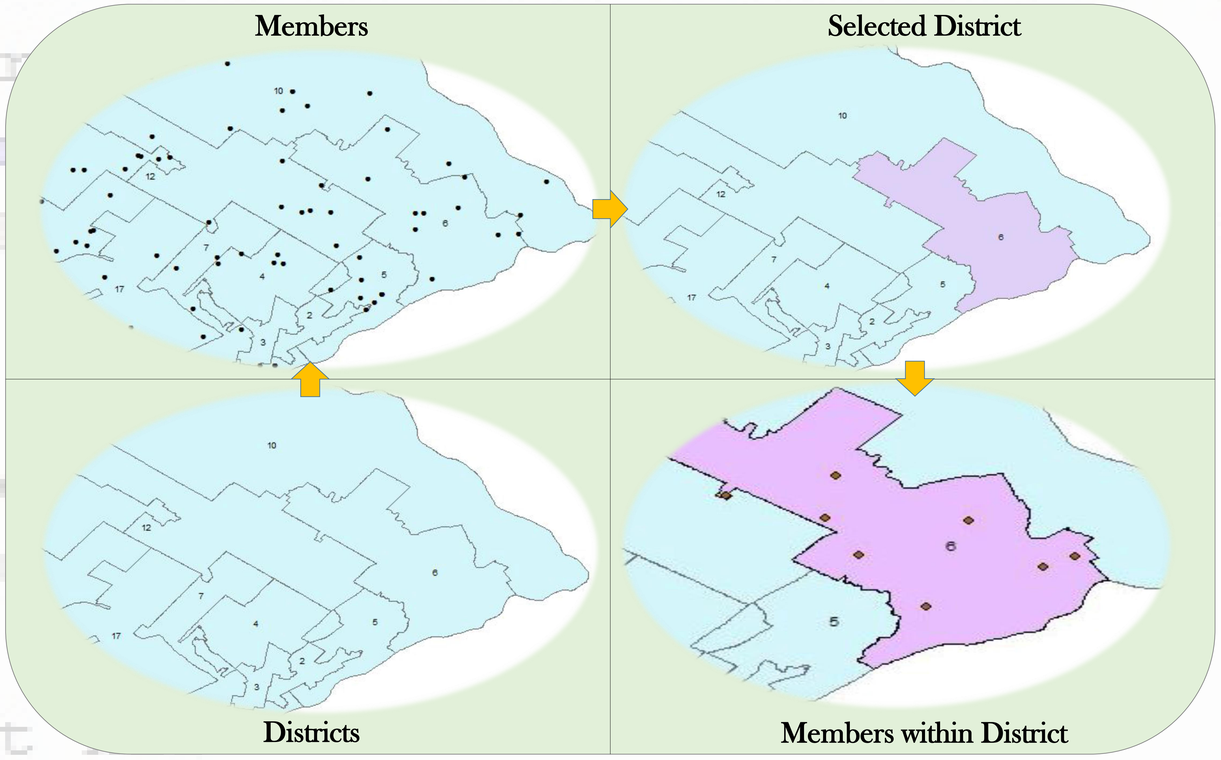
Terminology

Shapefile – geospatial vector data format containing points, lines, and polygons
Geocoding – process used to convert street addresses to latitude/longitude
GIS - data management system used to capture, store, manage, retrieve, analyze, and display spatial information

Flowchart



GIS Analysis



Data Acquisition

PA General Assembly (www.legis.state.pa.us)
District shapfiles, contact information, committee assignments

US Census Tiger/line® Files (www.census.gov)
Zip code shapefiles

Pennsylvania Society of Land Surveyors (PSLS)
Membership list

Output Example

District	F_Name	L_Name	Address	Town
42	Mark	Brown	301 Almshouse Road	Carnegie
42	James	Jackson	138 Butternut Hill Lane	Crafton
42	Alex	Smith	1918 Summit Avenue	Avalon
42	Carol	Ent	12 Rohan Road	Green Tree

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